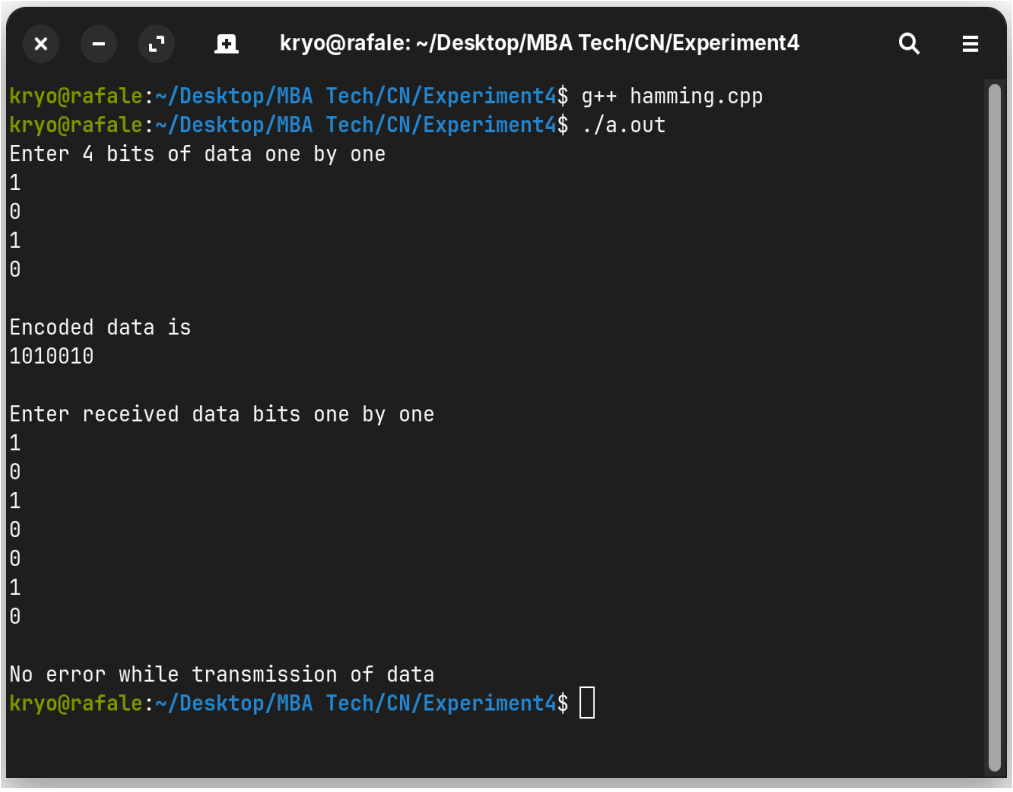
SOURCE CODE:

```
#include <iostream>
using namespace std;
int main()
{
  int data[10];
  int dataatrec[10], c, c1, c2, c3, i;
  cout << "Enter 4 bits of data one by one\n";
  cin >> data[0];
  cin >> data[1];
  cin >> data[2];
  cin >> data[4];
  // Calculation of even parity
  data[6] = data[0] ^ data[2] ^ data[4];
  data[5] = data[0] ^ data[1] ^ data[4];
  data[3] = data[0] ^ data[1] ^ data[2];
  cout << "\nEncoded data is\n";

  for (i = 0; i < 7; i++)
    cout << data[i];
  cout << "\n\nEnter received data bits one by one\n";
  for (i = 0; i < 7; i++)
    cin >> dataatrec[i];
  c1 = dataatrec[6] ^ dataatrec[4] ^ dataatrec[2] ^ dataatrec[0];
  c2 = dataatrec[5] ^ dataatrec[4] ^ dataatrec[1] ^ dataatrec[0];
  c3 = dataatrec[3] ^ dataatrec[2] ^ dataatrec[1] ^ dataatrec[0];
  c = c3 * 4 + c2 * 2 + c1;

if (c == 0)
  {
    cout << "\nNo error while transmission of data\n";
  }
else
  {
    cout << "\nError on position " << c;
    cout << "\nData sent : ";
    for (i = 0; i < 7; i++)
      cout << data[i];
    cout << "\nData received : ";
    for (i = 0; i < 7; i++)
      cout << dataatrec[i];
    cout << "\nCorrect message is\n";
```

```
// if errorneous bit is 0 we complement it else vice versa
      if (dataatrec[7 - c] == 0)
         dataatrec[7 - c] = 1;
      else
         dataatrec[7 - c] = 0;
      for (i = 0; i < 7; i++)
      {
         cout << dataatrec[i];
      }
   }
   return 0;
}
```

OUTPUT:

No Error



With Error